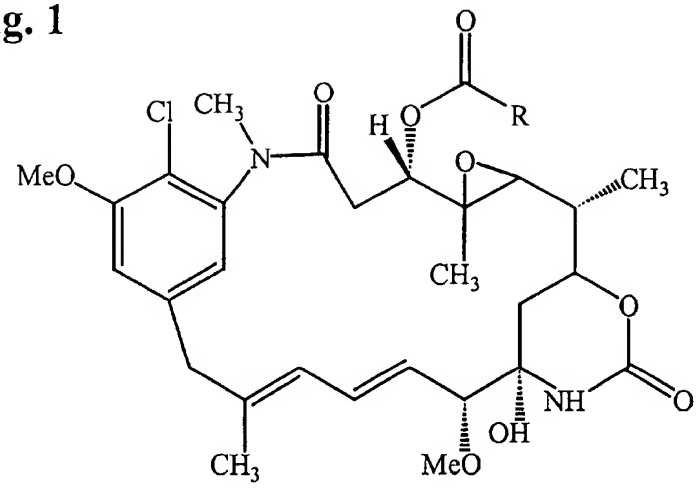
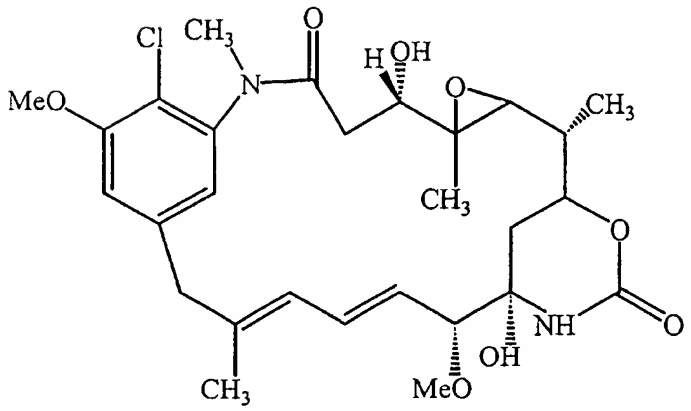
Fig. 1



R

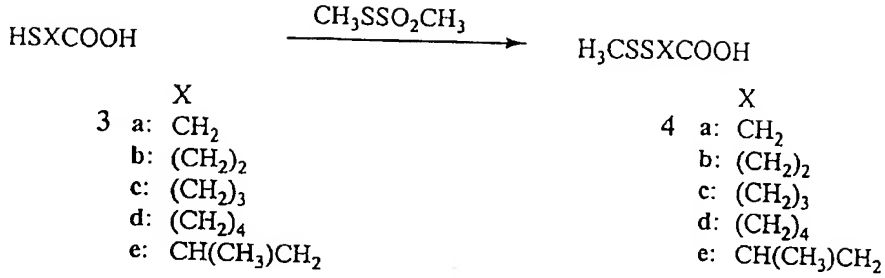
1 **a**: CH_3,
b: CH_2CH_3,
c: $CH(CH_3)_2$,
d: $(CH_2)_2CH_3$, or
e: $CH_2CH(CH_3)_2$

reducing agent



2

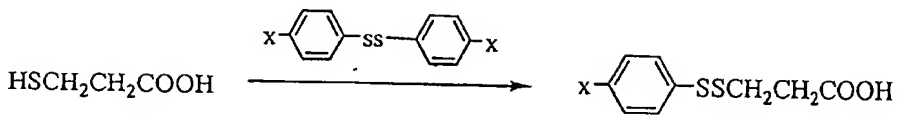
Fig. 2a



3	X
a:	CH_2
b:	$(CH_2)_2$
c:	$(CH_2)_3$
d:	$(CH_2)_4$
e:	$CH(CH_3)CH_2$

4	X
a:	CH_2
b:	$(CH_2)_2$
c:	$(CH_2)_3$
d:	$(CH_2)_4$
e:	$CH(CH_3)CH_2$

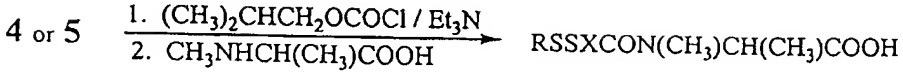
Fig. 2b



3 b

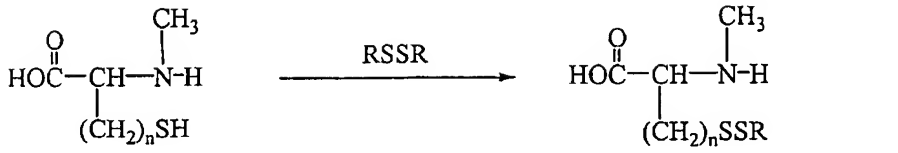
5	
a:	x = H
b:	x = NO_2

Fig. 2c



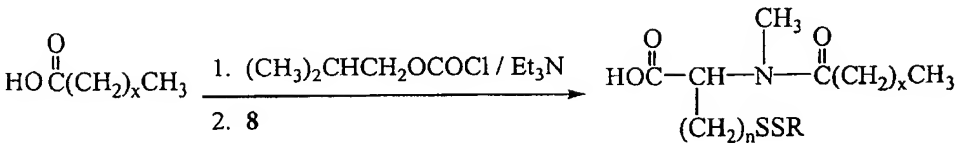
6	X	R
a:	CH_2	CH_3
b:	$(CH_2)_2$	CH_3
c:	$(CH_2)_3$	CH_3
d:	$(CH_2)_4$	CH_3
e:	$(CH_2)_2$	C_6H_5
f:	$(CH_2)_2$	p-$NO_2C_6H_4$
g:	$CH(CH_3)CH_2$	CH_3

Fig. 3a



	n		n
7 a:	1: *N*-methyl-*L*-cysteine	**8 a:**	1
b:	2: *N*-methyl-*L*-homocysteine	**b:**	2

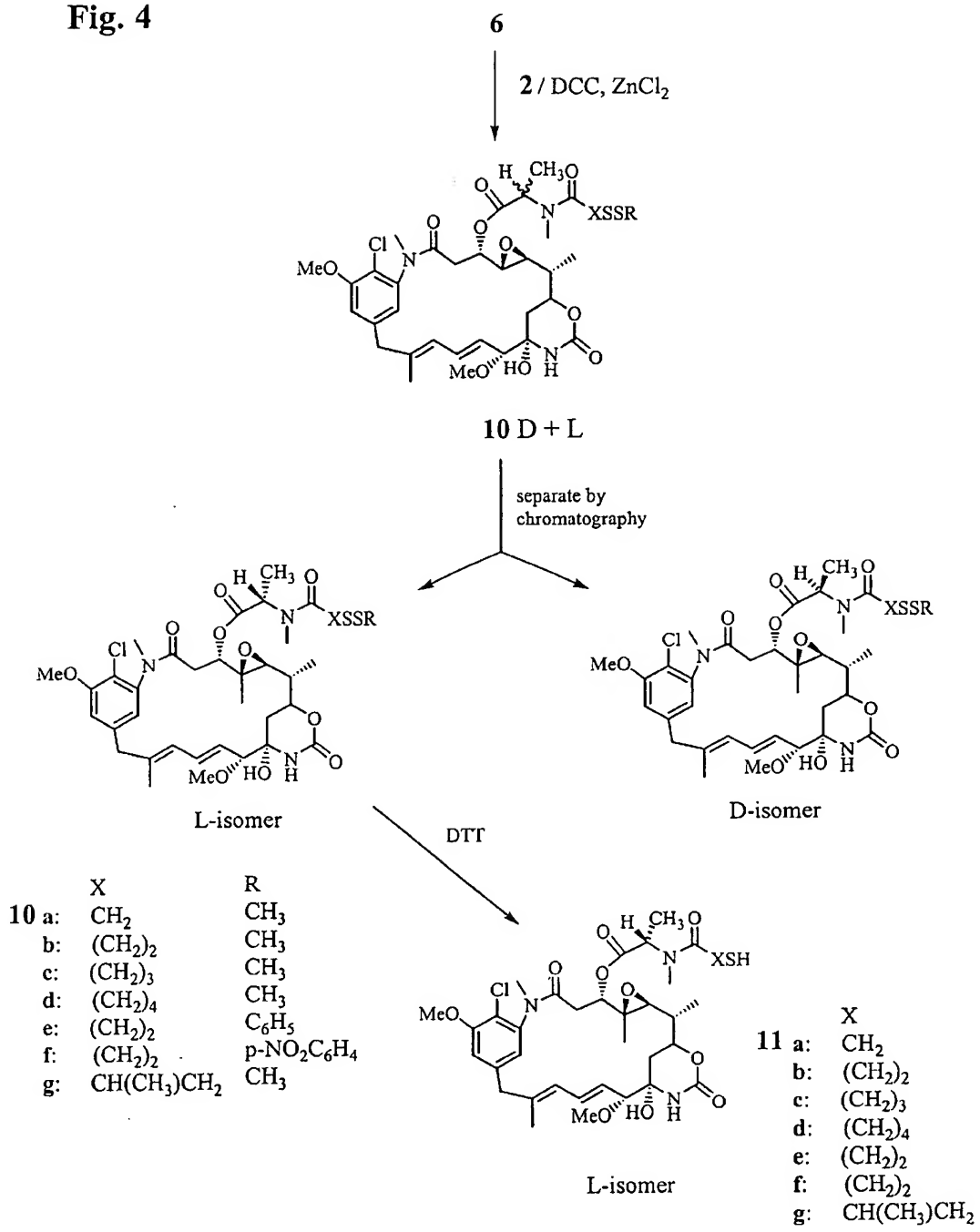
Fig. 3b



	n
9 a:	1
b:	2

x = 0 - 10
R = CH_3, higher alkyl, aryl

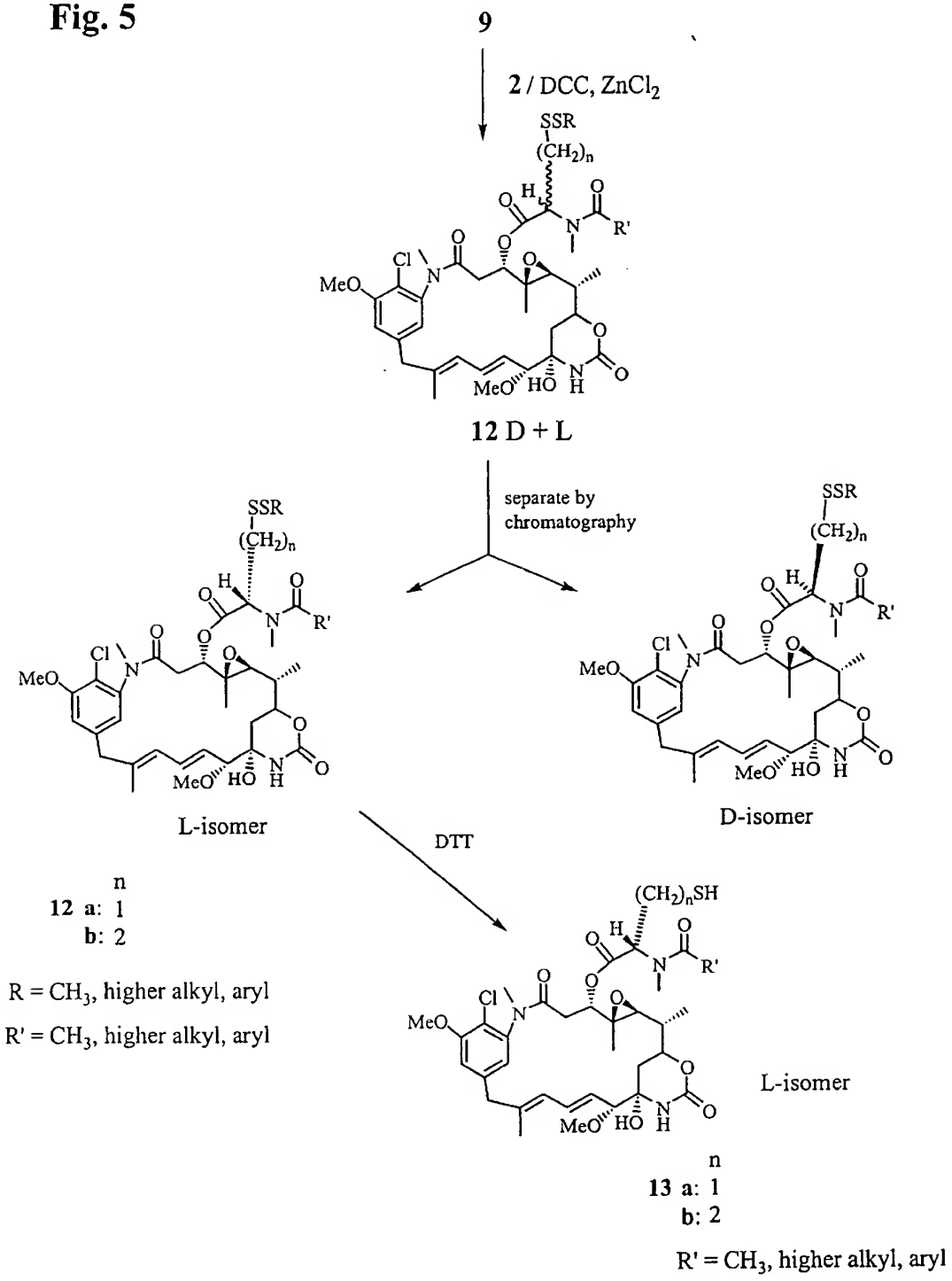
Fig. 4



	X	R
10 a:	CH_2	CH_3
b:	$(CH_2)_2$	CH_3
c:	$(CH_2)_3$	CH_3
d:	$(CH_2)_4$	CH_3
e:	$(CH_2)_2$	C_6H_5
f:	$(CH_2)_2$	$p\text{-}NO_2C_6H_4$
g:	$CH(CH_3)CH_2$	CH_3

	X
11 a:	CH_2
b:	$(CH_2)_2$
c:	$(CH_2)_3$
d:	$(CH_2)_4$
e:	$(CH_2)_2$
f:	$(CH_2)_2$
g:	$CH(CH_3)CH_2$

Fig. 5


9
2 / DCC, ZnCl2
12 D + L
separate by chromatography
L-isomer
D-isomer
DTT
n
12 a: 1
b: 2
R = CH3, higher alkyl, aryl
R' = CH3, higher alkyl, aryl
L-isomer
n
13 a: 1
b: 2
R' = CH3, higher alkyl, aryl